

MATERIAL SAFETY DATA SHEET

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SECTION I IDENTITY

A. Manufacturer's Name: W. R. BONSAI COMPANY
 B. Address: P.O. BOX 241148
 8201 ARROWRIDGE BLVD.
 CHARLOTTE, N. C. 28224-1148
 (704) 525-1621
 C. Emergency Telephone:
 D. Distributor: (If Applicable)
 E. Chemical Names and Synonyms: Silica Dioxide - Silicon Dioxide
 Silicon Dioxide, Crystalline
 Crystalline Silica
 Quartz
 F. Trade Names and Synonyms: BLASTING SAND GRADES
 30-70 FINE SAND 12-20 MEDIUM SAND MEDIUM COARSE SAND
 20-70 MEDIUM FINE SAND 20-30 MEDIUM SAND 8-20 COARSE SAND
 G. Freight Classification (Truck Load): Item 90220 100J Class 50 + 35
 H. U.F.C. (Rail) Sand Unground (N.O.I.): Item 47460 Class 13 (Bulk). Class 17 1/2 (Bagged).
 I. Standard Commodity Code (Unground Silica Sand): 14-413-10
 J. D.O.T. Classification: Non Flammable Solid (Not listed in 49 CFR 172.101)
 K. H.M.I.S. Classification: 4-0-0-E
 L. N.F.P.A.
 M. U.N./NA: Not Listed
 N. Chemical Family: Natural Rock Forming Mineral
 Natural Mineral Extracted From Earth (Inorganic)
 Silica: Natural Mineral Quartz
 O. I.M.O. Classification: Not Listed
 P. Standard Industrial Code (S.I.C.): 1446 Industrial Sand (1442 Sand & Gravel)
 Q. C.A.S. Number: 14808-60-7
 R. Date Prepared: April 1991
 S. Signature of Preparer:

Prepared By:

Friedrich Goeman
 Friedrich Goeman

SECTION II HAZARDOUS INGREDIENTS

Silica Dioxide — SiO_2 Hazard Data:

Current OSHA PEL 8-HR. TWA (Respirable Dust): 0.10 mg/m^3
 mg/m^3

Crystalline Quartz (Respirable) $\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2} =$

Quartz (Total Dust) $\frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2} =$

The percent of quartz in the formula is the amount determined from an airborne sample.

Both concentration and percent quartz for the application of this limit are to be determined from fractions passing a size-selector (10 microns or smaller).

OSHA STANDARD - See 29 CFR, Part 1910.1000 (Z-3 Table) For Mineral Dusts. Specifically "Silica". Crystalline Quartz (Respirable)

Proposed ACGIH 8-HR. TWA - 50 micrograms respirable free Silica per cubic meter of air (50 Ug/m^3)

P.E.L. = Permissible Exposure Limit

T.W.A. = Time Weighted Average

Prolonged overexposure to Crystalline Free Silica Dust above the Threshold Limit value specified above may cause scarring of the lungs with cough and shortness of breath. A delayed lung injury, silicosis, may result from breathing free silica. Silicosis is a form of disabling, progressive and sometimes fatal pulmonary fibrosis characterized by the presence of typical nodulation in the lungs. (Reference: H.E.W. publication #NIOSH 75-120) Crystalline Free Silica has been classified as having "limited evidence" of carcinogenicity in humans by the International Agency For Research on Cancer. (Reference: IARC Monographs Volume 42)

RESPIRATORY PROTECTION FOR CRYSTALLINE SILICA

(From September, 1978 Occupation Health Guideline for Crystalline Silica, U.S. Department of Labor
 U.S. Department of Health and Human Services. et. al)

Condition	*Minimum Respiratory Protection Required Above $X^{**} \text{ mg/m}^3$
Particulate	Any dust respirator. Capable of removing < 10 micron dust.
Concentration	
$5X^{**} \text{ mg/m}^3$ or less	
$10X^{**} \text{ mg/m}^3$ or less	Any dust respirator, except single-use or quarter-mask respirator. Any fume respirator or high efficiency particulate filter respirator. Any supplied-air respirator. Any self-contained breathing apparatus.
$50X^{**} \text{ mg/m}^3$ or less	A high efficiency particulate filter respirator with a full facepiece. Any supplied-air respirator with a full facepiece, helmet or hood. Any self-contained breathing apparatus with a full facepiece.
$500X^{**} \text{ mg/m}^3$ or less	A powered air-purifying respirator with a high efficiency particulate filter. A Type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous-flow mode.

Greater than
500X** mg/m³ or for
entry and escape
from unknown
concentrations

Self-contained breathing apparatus with a full facepiece
operated in pressure demand or other positive pressure
mode. A combination respirator which includes a Type C
supplied-air respirator with a full facepiece operated in
pressure-demand or other positive pressure or continuous-flow mode
and an auxiliary self-contained breathing apparatus operated in pressure-
demand or other positive pressure mode.

Fire Fighting

Self-contained breathing apparatus with a full facepiece operated in
pressure-demand or other positive pressure mode.

*Only NIOSH-approved or MSHA-approved equipment should be used.

**X indicates the permissible exposure as defined above

SAFETY GLASSES AND GLOVES ARE OPTIONAL. DEPENDING ON PRODUCT USE.

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

- A. Boiling Point: 4046°F 2230°C
- B. Vapor Pressure (mm Hg): Not Applicable
- C. Vapor Density (air = 1): Not Applicable
- D. Solubility in Water: None
- E. Appearance and Odor: White to tan/odorless
- F. Specific Gravity (H₂O = 1): 2.65
- G. Melting Point: 3110°F 1710°C
- H. Evaporative Rate (Butyl Acetate = 1): None
- I. pH: 6.0 to 7.5
- J. Percent Solids by Weight: 100%
- K. Molecular Weight (calculated): 60.1

SECTION IV FIRE AND EXPLOSION HAZARD DATA

- A. Flash Point: No flash point, open or closed cup.
- B. Flammable Limits: Not flammable.
- C. Extinguishing Media: Use extinguishing media appropriate to the surrounding fire.
- D. Special Fire Fighting Procedure: No fire or explosive danger. Material is not combustible. Fire fighters should use self-contained breathing apparatus and eye protection in heavy concentrations of dust.
- E. Unusual Fire and Explosion Hazards: None

SECTION V REACTIVITY DATA

A. Stability: Stable (Inert)

B. Incompatibility (Material to Avoid): Reacts with hydrofluoric acid to generate volatile, corrosive gas, SiF_4 (silicon tetrafluoride). May be attacked by strong alkalis. Will combine chemically with many metallic oxides upon heating at high temperatures.

C. Hazardous Decomposition or Byproducts: None

D. Hazardous Polymerization: Will not Occur

E. SiO_2 (Quartz): When exposed to high temperatures, may change crystalline structure to form tridymite (above 870°C) or Cristobalite (above 1470°C) which have greater health hazards than quartz.

SECTION VI HEALTH HAZARD DATA

ROUTES OF ENTRY

SKIN: Wear appropriate work clothing to minimize skin contact and skin abrasion and wash skin at each shift change.

INGESTION: Before eating, hands and face should be washed. All food and lunches should be kept and eaten in separate lunch rooms. Do not eat, drink or smoke in work areas where exposure to silica dust may be excessive.

EYE CONTACT: Silica sand dust may be an irritant to those sensitive to such exposure. Safety dust glasses or goggles should be worn in these cases.

INHALATION: Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic slowly developing disease.

CARCINOGENICITY: Crystalline Silica is listed in the IARC Monographs On The Evaluation of The Carcinogenic Risk of Chemicals To Humans as having "limited evidence" for carcinogenicity to humans. (IARC Monographs Volume 42)

SUBSTANCE: SAND, SILICA (14808-60-7)

Source	Data
1. NIOSH-Registry of Toxic Effects of Chemical Substances 1982-Vol 3.	1. Inhalation: TC10: 16 mppct/8 hr/17.9 yrs. LC10: 300 mgs/cum/10 yrs. 2. Intravenous Rat: LD10: 90 mg/kg 3. Aquatic Toxicity Rating: TLM 98: over 1000 ppm. 4. Tumorigenic Data: Listing of data for rats, hamsters.
2. American Conference Governmental Industrial Hygienists, 1985-86, Page 39, "Notice of Intended Changes."	1. TLV-TWA: 0.10 mg/cu meter-respirable dust. TLV-TWA 10 mg/cu meter-total dust.
3. Dangerous Properties of Industrial Materials: Fourth Edition, S&X Page 1093.	1. Toxic Hazard Rating : Acute Local Inhalation: 2 Acute Systemic: 0 Chronic Local: Inhalation 1 Chronic Systemic: Inhalation 1

2. Toxicology: "From the point of view of the number of men exposed and cases of disability produced, silica is the chief cause of pulmonary dust disease. The prolonged inhalation of dust containing free silica may result in the development of a disabling pulmonary fibrosis known as silicosis.
4. Industrial Hygiene and Toxicology, F.A. Patty, Vol. 1, Page 121 and Vol. 2B, Page 3016.
5. International Agency For Research On Cancer (IARC) Monographs On The Evaluation Of The Carcinogenic Risk Of Chemicals To Humans - Silica and Some Silicates - Volume 42
6. OSHA Hazard Communication Rule 29 CFR Sections 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21
7. ASTM Standard E 1132-86
1. "Silicosis adult disease (pneumoconiosis) of the lungs resulting from over exposure to free SiO_2 dust, usually begins insidiously with symptoms of coughing, dyspnea, wheezing and repeated non-specific chest diseases.
1. There is "sufficient evidence" for the carcinogenicity of crystalline silica to experimental animals.
2. There is "limited evidence" for the carcinogenicity of crystalline silica to humans.
3. "Limited evidence" of carcinogenicity indicates that a causal interpretation is credible, but that alternative explanations, such as chance, bias or confounding, could not be adequately excluded.
1. Right to know Laws and Regulations
1. Standard Practice for Health Requirements relating to occupational exposure to quartz dust.

NOTE: The above mentioned data is an incomplete abstract of the complete information disclosed in the source documents.

SIGNS AND SYMPTOMS OF EXPOSURE: Symptoms are dyspnea - caused by many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity and cough.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to the risk of impaired health due to a combination of smoking and silica dust exposure.

EMERGENCY AND FIRST AID PROCEDURES

General - If a known acute exposure or incident occurs, immediately call a physician or the nearest medical facility.

Inhalation - For acute exposure immediately remove person from the contaminated area. For extreme respiratory distress administer oxygen.

Skin - Remove affected clothing and wash the skin area exposed.

Ingestion - While ingestion is unlikely, if such incident occurs refer person to a physician.

Eye - Sand may be irritating to the eyes of sensitive or allergic personnel. In cases of extreme distress wash the eyes carefully and gently with warm water and seek medical attention.

SECTION VII

PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Cleanup with dustless method (use vacuum or wet sweeping). Provide ventilation.

WASTE DISPOSAL METHOD: Follow state and local regulations for solid waste.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Use dustless system of storage and handling. Keep area well ventilated.

OTHER PRECAUTIONS: Use good housekeeping techniques.

SECTION VIII CONTROL MEASURES

RESPIRATORY PROTECTION: ANSI Z88.2 - 1980 specifications or OSHA Standard #1910.134

VENTILATION: Local exhaust - as appropriate; mechanical (general) - as appropriate. Engineering controls (e.g. mechanical exhaust) should be in place in order to ensure that the employee exposure to respirable silica and respirable dust does not exceed the Permissible Exposure Limit.

PROTECTIVE GLOVES: Not required.

EYE PROTECTION: Recommended.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: NIOSH/MSHA approved particulate filter respirator. Air-supplied hoods for blasters.

USE WHEN CONDUCTING ABRASIVE BLASTING:

Protective Gloves - leather or equivalent to prevent cuts and abrasions.

Eye Protection - Industrial safety glasses with side shields or goggles.

Other Protective Equipment - Hearing protectors whenever abrasive blasting operation generates excessive noise levels. Sand blasters require special protective equipment and safety precautions.

WORK/HYGENIC PRACTICES: Use good housekeeping techniques.

SPECIAL PRECAUTIONS: Use dustless systems for handling, storage, and clean up so that airborne dust does not exceed the PEL. Use adequate ventilation and dust collection. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain, clean and test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Wash clothing which has become dusty; do not beat the dust from the clothing. We recommend that smoking be prohibited in all areas where respirators must be used. Warn your employees (and your customers-users in case of resale) by posting and other means of the hazard and OSHA precautions to be used. Provide training for your employees about the OSHA precautions.

SECTION IX

The data in this material safety data sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

The information and recommendations contained herein are based upon data believed to be correct.

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